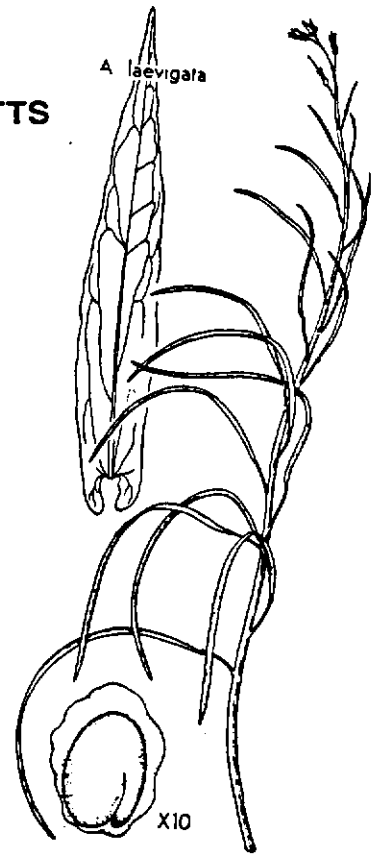
Natural Heritage & Endangered Species Program

**Commonwealth of Massachusetts**
**Division of Fisheries & Wildlife**
**Route 135**
**Westborough, MA 01581**
**(508) 792-7270**

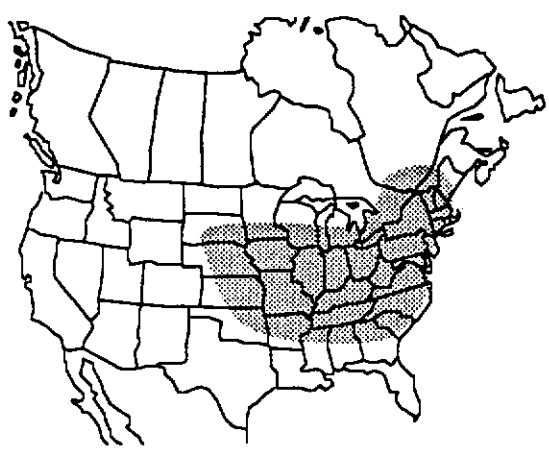



## THREATENED SPECIES OF MASSACHUSETTS

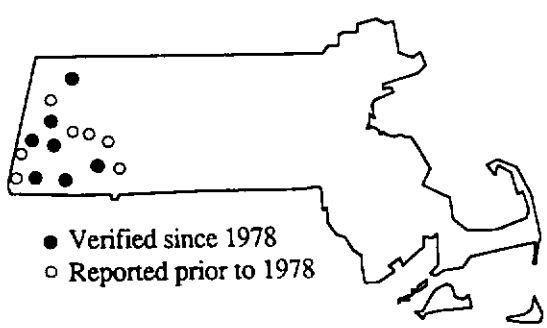
**Smooth Rock-cress**
*Arabis laevigata* (Muhl. ex Willd.) Poiret

DESCRIPTION: Smooth rock-cress is an herbaceous biennial in the Mustard family (Brassicaceae or Cruciferae) that rises from a basal rosette of leaves. With the exception of the first year's rosette, the plant is entirely hairless or smooth. It grows from about 0.3 to 1 m (about 1 to 3 ft.) tall and is glaucous (with a whitish cast) overall. During the second year, smooth rock-cress's spatulate, basal leaves are hairless and may soon wither. The lanceolate leaves that grow from its stem are stalkless, 3–15 cm (1.2–5.9 in.) long and clasp the stem with two rounded lobes. Smooth rock-cress blooms from early June to late August. Its white to greenish-white flowers are arranged in a terminal raceme (a group of stalked flowers on an unbranched, elongate axis). Each flower has four petals from 3 to 6 mm (0.12 to 0.24 in.) long—as long as or slightly longer than the sepals. Like most other members of the Mustard family, smooth rock-cress has 4 petals arranged in the shape of a crucifix (the source of the old family name, Cruciferae), 4 sepals and 6 stamens in a tetradynamous arrangement—with the two outer stamens shorter than the four inner ones. The plant's mature siliques (a type of elongate fruit pod unique to the Mustard family) either extend out horizontally or curve downward, providing the basis of the alternative name of "sickle pod". These siliques are 5–10 cm (2–4 in.) long and 1.5–2 mm (0.06–0.08 in.) wide.

Gleason, H.A. The New Britton and Brown Illustrated Flora of the Northeastern U.S. and Adjacent Canada. New York Botanical Garden, 1952.



Documented Range of Smooth Rock-cress




Massachusetts Distribution by Town

RANGE: The documented range of smooth rock-cress extends from Quebec to South Dakota and south to Georgia, Alabama and Oklahoma. In Massachusetts, current stations (discovered or located since 1978) are restricted to the western part of the state.

SIMILAR SPECIES: Green rock-cress (*Arabis missouriensis*) could be mistaken for smooth rock-cress. Like smooth rock-cress, it has whitish flowers. Nevertheless, the leaves of green rock-cress are more numerous and shorter—only 5–9 cm (2–3.5 in.) long, as compared to 3–15 cm (1–6 in.) long in smooth rock-cress. In addition, green rock-cress has a greener coloration than smooth rock-cress.

HABITAT IN MASSACHUSETTS: Smooth rock-cress is a plant of rocky woods, shaded ledges, floodplains and river-bank thickets. It seems to prefer calcareous (lime-rich or sweet) soils. In Massachusetts, specific habitats include a rocky wooded slope, a floodplain, a talus slope (a slope made by the accumulation of broken pieces of rock), a dolomite limestone ledge, a calcareous boulder in a sugar maple/white pine forest and the base of low ledges under a canopy of trees, and a rocky slope in a rich, mesic woods. Sunlight in these habitats varies from full to filtered. Soil moisture varies as well, including mesic (moderately moist), seasonally inundated and dry sites. Most, but not all, stations are on slopes, with east, west or south-facing aspects. Plants found growing with smooth rock-cress in Massachusetts include sugar maple (*Acer saccharum*), white ash (*Fraxinus americana*), red oak (*Quercus rubra*) and various spleenworts (*Asplenium* spp.) and grasses (*Poa* spp.).

POPULATION STATUS: Smooth rock-cress is currently listed as "Threatened" in Massachusetts, where there are 9 current stations (discovered or relocated since 1978) in 7 towns and 9 historical stations (unverified since 1978) in 8 towns. (Two towns have both current and historical stations and are represented by a single, solid dot each on the town distribution map.) As with all species listed in Massachusetts, individuals of the species are protected from take (picking, collecting, killing...) and sale under the Massachusetts Endangered Species Act. In Massachusetts, threats include development of its habitat and, possibly, trampling by hikers and rock-climbers. The species is also considered rare in Maine, New Hampshire, Delaware and Kansas. Smooth rock-cress is considered to be demonstrably secure globally.

MANAGEMENT RECOMMENDATIONS: The following advice comes from observations of the populations in Massachusetts. Smooth rock-cress inhabits moist rocky wooded slopes that have at least some calcareous influence. The plant usually grows in crevices in the rock and survives well in the shade of a hardwood forest. The habitat is not usually developed, but if logging is taking place around the plants, care should be taken not to completely open the canopy, and not to disturb the plants by leaving slash on them. An excessive covering of leaf litter may be injurious to this species, simply by covering its basal rosette of leaves, although normal leaf-fall should not cause any problems.

The invasive alien garlic mustard (*Alliaria petiolata*) was found growing at smooth rock-cress's floodplain woodland station in Massachusetts. In general, aggressive exotic species can be a problem for native, herbaceous woodland species, and disturbed areas make it much easier for these species to establish a foothold. Garlic mustard is thought to pose a serious threat to woodland communities in the eastern and midwestern United States. Garlic mustard plants can produce hundreds of seeds each and seeds can remain viable for five years; hence, a long-term effort is required to eradicate such exotics from a site. One effective method of doing so is to cut the flowering stems back to the ground before the seeds can mature and disperse. Basically, anything that disturbs the surface of the soil can facilitate the entry of aggressive exotic species and even certain aggressive native species. While disturbance at the floodplain site is provided by seasonal inundation, other disturbances that can allow garlic mustard to invade woodlands include treefalls, trampling of the soil by animals, and creation of roads and trails. At another site, the aggressive alien species Japanese barberry (*Berberis thunbergii*) was found growing. Removal of such invasive plants would be expected to help native species maintain their populations.

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